

Applicant: Heikki Niskanen
Application No.: 10/569,568
Response to Office action dated May 14, 2008
Response filed Aug. 21, 2008

Claim Listing

1–15. (cancelled)

16. (currently amended) A method for winding a paper, board or material web, comprising the steps of:

winding simultaneously a plurality of separate rolls, each of the plurality of rolls having a winding core, the winding cores forming a plurality of adjacent abutting winding cores having roll ends placed against each other, the ends formed by severing cuts which deviate from a plane perpendicular to an axis defined by each winding core, the cut end structure of at least one winding core abutting the cut end structure of an adjacent winding core, said abutting cut end structures being different in shape and not fully corresponding to each other;

wherein the winding cores and the separate rolls formed thereon are positioned side by side supported on at last two winder drums;

coupling the winding cores so that the axis defined by each winding core is aligned along a common axis of rotation during winding, by the roll ends placed against each other;

loading the core ends against one another by core chucks arranged in connection with a first free end and a second free end of outermost winding cores, so that the winding core ends placed against each other are loaded longitudinally; and causing the winding cores to extend longitudinally by winding simultaneously the plurality of separate rolls; and

as the web is wound on the winding cores, yielding longitudinally, portions of the winding cores ends formed by the severing cuts, said portions of the winding cores ends formed by the severing cuts having a profile of a depth and shape which do not fully correspond to each other so as to yield longitudinally, thus providing[[e]] axial play between the winding cores.

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17. (previously presented) The method of claim 16, wherein the ends formed by severing cuts comprise separate pieces attached to portions of the winding cores.

18. (previously presented) The method of claim 16, wherein portions of the winding core ends are grooved to define male grooving and female grooving, such that when the ends of the winding cores are placed against one another in end-to-end relationship in the step of loading the core ends against one another, there is male grooving and female grooving engaged against each other.

19. (currently amended) A winder for a paper, board or material web, comprising:
a two-drum type winder having at least one drum;
a plurality of adjacent winding cores mounted and supported on the at least one drum of the winder, the winding cores defining axes, and having roll ends placed against each other, the ends formed by severing cuts which deviate from a plane perpendicular to the winding core axes to define broken severing cuts, the plurality of winding cores being in receiving relation to a slit component of the web, the plurality of winding cores defining outermost winding cores having free ends;
a core chuck engageable with each of the free ends of the outermost winding cores so as to keep the winding cores placed one after the other in place one against the other; and
wherein the winding core ends placed against each other are coupled to each other by the severing cuts, and wherein the broken severing cuts of the ends placed against each other do not fully correspond to each other and have a shape dimensioned such that there remains allowance for longitudinal yielding between the winding core ends.

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20. (previously presented) The winder of claim 19, wherein the severing cuts are separate pieces attached to the ends of the winding cores.

21. (previously presented) The winder of claim 19 wherein portions of the winding core ends are grooved such that mating ends formed between adjacent winding cores include a male grooved end and a female grooved end engaged against each other.

22. (withdrawn) A method of manufacturing a winding core for a winder, comprising the steps of:
making a plurality of winding cores;
forming each winding core of the plurality of winding cores to form a first severing cut which forms a first axial end of each winding core, which first severing cut is formed to have first grooves which deviate from a plane perpendicular to an axis defined by the winding core;
further forming each core of the plurality of winding cores to form a second severing cut which forms a second axial end of each winding core, the second severing cut being formed to have second grooves which deviate from the plane perpendicular to the axis defined by the winding core; and
wherein the formed first grooves of the first severing cut correspond to the formed second grooves of the second severing cut and wherein the correspondence is not complete such that the first grooves and the second grooves do not fully correspond to each other but the grooves on the first sides of the winding cores are unequal in depth to the grooves of the second sides, thereby providing axial play.

23. (withdrawn) The method of claim 22, wherein the first and second severing cuts are formed in a separate piece attached to the first and the second ends of each winding core.

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24. (withdrawn) The method of claim 22 wherein the first and second severing cuts that deviate from the plane perpendicular to an axis defined by the winding core, are made by turning on a lathe, milling/cutting, grinding, heating, pressing or swaging.

25. (withdrawn) A plurality of adjacent winding cores, comprising:
individual winding cores having roll ends placed against one another, the ends formed by severing cuts which deviate from a plane perpendicular to an axis defined by each winding core, the winding core ends arranged to keep the winding cores on the same axis of rotation in a winder during winding; and
wherein the roll ends placed against each other are coupled to each other by the severing cuts, and wherein the severing cuts have a shape dimensioned such that there remains allowance for longitudinal yielding between the winding core ends.

26. (withdrawn) The plurality of adjacent winding cores of claim 25, wherein the severing cuts are part of separate pieces attached to end portions of the winding cores.

27. (withdrawn) The winding cores of claim 25, wherein the severing cuts have a groove or grooves, placed such that in the ends placed against one another in end-to-end relationship there is a male and a female grooving against each other.

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28. (currently amended) ~~The method of claim 18~~ A method for winding a paper, board or material web, comprising the steps of:
winding simultaneously a plurality of separate rolls, each of the plurality of rolls having a winding core, the winding cores forming a plurality of adjacent abutting winding cores having roll ends placed against each other, the ends formed by severing cuts which deviate from a plane perpendicular to an axis defined by each winding core;
wherein the winding cores and the separate rolls formed thereon are positioned side by side supported on at last two winder drums;
coupling the winding cores so that the axis defined by each winding core is aligned along a common axis of rotation during winding, by the roll ends placed against each other;
loading the core ends against one another by core chucks arranged in connection with a first free end and a second free end of outermost winding cores, so that the winding core ends placed against each other are loaded longitudinally; and
causing the winding cores to extend longitudinally by winding simultaneously the plurality of separate rolls; and
as the web is wound on the winding cores, yielding longitudinally, portions of the winding cores ends formed by the severing cuts, said portions of the winding cores ends formed by the severing cuts having a profile of a depth and shape so as to yield longitudinally, thus providing axial play between the winding cores;
wherein portions of the winding core ends are grooved to define male grooving and female grooving, such that when the ends of the winding cores are placed against one another in end-to-end relationship in the step of loading the core ends against one another, there is male grooving and female grooving engaged against each other; and
wherein each winding core has a first end with the male grooving formed therein, and

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a second end with the female grooving formed therein, and wherein the male grooving and the female grooving do not fully correspond to each other so that grooves on the winding core first ends are unequal in depth to grooves on the winding core second sides, thereby providing axial play when the male grooving and female grooving engage against each other.

29. (new) The method of claim 16 wherein the longitudinal yielding is between 0.5–2 mm.

30. (new) The apparatus of claim 19 wherein the allowance for longitudinal yielding is between 0.5–2 mm.